

## REMARKS

### STATUS OF THE APPLICATION

Applicants wish to thank the Examiner for his clear explanation of the rejections in the Final Office Action dated July 20, 2005.

### DISPOSITION OF CLAIMS

Claims 1-6 are pending in this application.

*Claims 1-6 are rejected under and 35 U.S.C. § 103(a).*

### RESPONSE TO REJECTION UNDER 35 U.S.C. § 103(A)

#### JP-4-130190 TO KAORU, ET AL. IN VIEW OF U. S. PAT NO. 3,014,832 TO DONNELLY

Claim 1-6, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP-4-130190 to Kaoru, *et al.* (hereinafter "Kaoru"), in view of U.S. Patent 3,014,832 to Donnelly (hereinafter "Donnelly").

The Examiner states that Kaoru discloses a method of cleaning a surface of a papermaking rotating dryer drum wherein a release agent, an emulsified solution, is applied to the surface of the drum by direct spraying onto the surface at a rate of 2.0 L/min onto a surface of a Yankee drum dryer, the dryer having a width of 3 m. Kaoru fails to disclose the drying cylinder linear rotation speed, data that would permit to calculate the spray rate in the units claimed i.e., (mg)/(min)(m<sup>2</sup>).

However, according to the Examiner, Donnelly discloses drying cylinder drum rotation up to 3000 ft/min. Thus, if one were to utilize the Donnelly dryer rotation speed of 3000 ft/min, the Kaoru method of cleaning calculates to a spray rate of about 0.72 (mg)/(m<sup>2</sup>)/(min). (*emphasis added*). It would have been obvious to one skilled in the art to combine the teachings of Kaoru and Donnelly, because such a combination would improve the control of adhesion of the web to the dryer surface thus improving the quality of the Kaoru product. It would have been obvious that the supplying oil would fill the microscopic asperities on the drum surface and form a thin oil film on the surface of the drum.

Applicants respectfully disagree with the Examiner's reasoning of obviousness under 35 U.S.C. § 103(a) with reference to Kaoru in view of Donnelly. Section 2142 of the MPEP indicates that a *prima facie* case of obviousness is established only when:

- (1) all of the claim limitations are either taught, or suggested by the cited prior art;
- (2) there is some suggestion or motivation to modify or combine the cited prior art references; AND
- (3) there is a reasonable expectation of successfully producing the claimed invention via such a combination.

Section 2143 of the MPEP further explains that "[t]he teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not in applicant's disclosure."

Applicants respectfully assert that because neither of the three prongs set forth in the above test are satisfied by the Examiner's proposed combination of the two references, a *prima facie* case of obviousness is not established.

Specifically, Applicants respectfully disagree that Kaoru in view of Donnelly discloses all elements of the present invention. Neither Donnelly nor Kaoru disclose or suggest the amount of oil supplied to the surface of the drum dryer as described in the present invention. Kaoru discloses the width of the drum dryer to be 2m, 3m and 4m (corresponding to Examples 1, 2 and 3, and 4, respectively). However, parameters such as the rotating speed or surface speed of the drum dryer or the paper speed are not disclosed. Thus, the spray rate per minute and per area of Kaoru are not described. Therefore, because Kaoru cannot specify the spray rate in accordance with that provided by the present invention ( $(\text{mg})/(\text{m}^2)(\text{min})$ ) and because Donnelly does not provide spray rates for application of the release agent directly to the surface of the drum dryer, the combination of references does not teach or suggest all of the claim limitations.

In addition, the Examiner quotes a drum rotation speed of 3000 ft/min (equivalent to about 915 m/min) from Donnelly, as a basis to calculate the spray rate to be incorporated in Example 3 of Kaoru. The Examiner arrives at a number 0.72  $(\text{mg})/(\text{m}^2)(\text{min})$  for the spray rate per unit area by using the parameters of Example 3 in Kaoru. We respectfully submit that the Examiner is in error in his calculation of the

spray rate as used in Example 3. Calculations from Example 3 are provided below for clarification purposes:

$$\begin{aligned}\text{Spray rate in Kaoru} &= 2.0 \text{ (L)/(min)} \\ &= 2,000 \text{ (cm)}^3\text{/(min)}\end{aligned}$$

For a specific gravity of 1 (g)/(cm)<sup>3</sup>,

$$\text{Spray rate} = 2,000 \text{ (g)/(min)} \quad (\text{A})$$

For a 3 m wide drum, at a drum rotation of 3,000 (ft)/(min),

$$\begin{aligned}\text{Exposed Area of the drum} &= 3 \text{ (m)} \times 3,000\text{(ft)/(min)} \times 0.3048 \text{ (m)/(ft)} \\ \text{in one minute} &= 2,745 \text{ (m)}^2 \quad (\text{B})\end{aligned}$$

Therefore,

$$\begin{aligned}\text{Spray Rate/Unit Area} \\ \text{at the Drum Rotation} \\ \text{Speed of 915 (m)/(min)} &= (\text{A})/(\text{B}) \\ &= [2,000 \text{ (g)/(min)}]/2,745 \text{ (m)}^2 \\ &= 0.728 \text{ (g)/(m)}^2\text{(min)} \\ &= \underline{728 \text{ (mg)/(m)}^2\text{(min)}}\end{aligned}$$

The Examiner has erred in assuming the spray rate per unit area in terms of (mg) instead of (g). Clearly, a rate of 728 (mg)/(m)<sup>2</sup>(min) is outside any suggested spray rates by the claimed invention. Similarly, calculations for all Kaoru Examples at a drum rotation speed of (as high as) 3000 ft/min would show a spray rate per unit area distinctly higher than the claimed spray rate. Please see the Table below:

KAORU EXAMPLE No.	DRUM WIDTH (M)	SPRAY RATE PER UNIT AREA (MG)/(M) <sup>2</sup> (MIN)
1.	2	546
2.	3	544
3.	3	728
4.	4	819

Therefore, Applicants respectfully submit that all claim limitations are not taught or suggested by the combination of Kaoru and Donnelly.

Deriving any other drum rotation speed from Donnelly would be akin to hindsight reconstruction because “[t]he teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not in applicant’s disclosure.” The maximum drum rotation speed that Donnelly teaches is 3000 (ft)/(min). In fact, in Examples (I), (II), and (III), Donnelly teaches even lower drum rotation speeds of 2300 (ft)/(min), 1600 (ft)/(min), and 2400 (ft)/(min). Clearly, for lower rotation speeds, the spray rate, using the parameters of Example 3 of Kaoru, would be even higher than that at 3000 (ft)/(min). Particularly, the spray rates at the three rotation speeds would correspond to 950 (mg)/(m)<sup>2</sup>(min), 1365 (mg)/(m)<sup>2</sup>(min) and 910 (mg)/(m)<sup>2</sup>(min), distinctly outside the range recommended and claimed in the present invention.

Similarly, for Examples 1, 2 and 4 of Kaoru, the spray rates for rotation speeds of 1600 (ft)/(min), 2300 (ft)/(min) and 2400 (ft)/(min) (specifically enumerated in Donnelly) will be higher than that for a rotation speed of 3000 (ft)/(min). Secondly, Kaoru, in view of Donnelly, or at every drum rotation speed taught in Donnelly, will provide a worse performance compared to the presently claimed invention. Applicants respectfully submit that Kaoru in view of Donnelly (to be precise, at no rotation speeds taught in Donnelly) does not teach all the claim limitations of the present invention.

Therefore, even if the Kaoru and Donnelly were combinable (which they are not), all claim limitations are not taught in the combined references.

With respect to the combining of references, Section 2143.01 of the MPEP indicates that, in accordance with the Federal Circuit’s decision in *In re Mills*, “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). There is no motivation or suggestion in Kaoru or Donnelly to combine the two references in order to arrive at Applicants’ invention.

More specifically, there is neither a motivation or suggestion to combine Donnelly and Kaoru nor a reasonable expectation of successfully producing the claimed invention via the combination of references because, based on the teachings of Donnelly, and as shown from the calculations above, a combination would result in spray rates clearly outside the claimed ranges.

Moreover, as described in the present patent application, a spray rate above about 500 (mg)/(m)<sup>2</sup>(min) would result in dripping of the surface treatment agent. Such dripping is not desired because it would cause oil stains on the paper being processed and also contaminate the peripheral equipment. (See page 7 of Specification) Therefore, in fact, a combination of Kaoru and Donnelly as asserted by the Examiner teaches away from the present invention, *inter alia*, with respect to the spray rates.

Finally, the Examiner also asserts that Donnelly's Example 1 uses an oil-in-water emulsion having 6% oil and 94% water and a water to oil ratio of 15.7, which reads on an agent wherein water is 3-30 times as much as oil that is recited in Claim 5 of the present invention. Applicants respectfully submit that this disclosure would be relevant only when the release agent is desired to be applied to the web, as shown in Column 8, lines 50-62 of Donnelly. Yet the Examiner has asserted that Kaoru discloses a method of cleaning a surface of a paper making rotating dryer drum wherein a release agent, an emulsified oil solution, is applied to the surface of the drum by direct spraying onto the surface. Thus, the oil-in-water emulsion percentages supplied by the Examiner would not provide any motivation to combine the references or a reasonable expectation of successfully combining the references since such values are not applicable to Kaoru.

Therefore, Applicants believe that the cited references either alone or in combination do not render Claim 1 and Claims 2-6 (because Claims 2-6 are dependent on Claim 1) obvious under 35 U.S.C. §103(a) as a *prima facie* case of obviousness is not established. It is respectfully requested that these rejections be withdrawn in light of the above arguments.

## CONCLUSION

In view of the present amendment and the above remarks, Applicants respectfully submit that stated grounds of rejection have been properly traversed, accommodated, or rendered moot and that a complete response has been made to the Final Office Action July 20, 2005.

Therefore, Applicants believe that the application stands in condition for allowance with withdrawal of all grounds of rejection. A Notice of Allowance is respectfully solicited. If the Examiner has questions regarding the application or the contents of this response, the Examiner is invited to contact the undersigned at the number provided.

There are no fees due in accordance with this response. However, should a fee be due that is unaccounted for, please charge such fee to Deposit Account No. 501447. Furthermore, if any extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefore are hereby authorized to be charged to our Deposit Account No. 501447.

Respectfully Submitted,

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